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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,935	12/14/2004	Roberto Lanfredi	262883US0XPCT	8635
22850	7590	05/29/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
LSTVOYB, GREGORY				
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE		DELIVERY MODE		
05/29/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/516,935

**Applicant(s)**

LANFREDI ET AL.

**Examiner**

GREGORY LISTVOYB

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 8, 10-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Ingram et al (US 4692472) herein Ingram in combination with Iwamoto et al (US 6167892) herein Iwamoto and Davis et al (US 4174427) herein Davis.

Regarding claims 1, 6, 7 and 10 Ingram discloses a process for the preparation of expandable vinylaromatic polymers (i.e. styrene, Column 1, line 50) which comprising:

a) forming an expandable bead by polymerizing in aqueous suspension of at least one vinylaromatic monomer in the presence of a suspending agent selected from inorganic salts of phosphoric acid;

b) recovering the expandable beads bead from the reaction container; c) washing the beads expandable bead thus obtained with an aqueous solution d) recovering the washed beads expandable bead substantially without any inorganic salt of phosphoric acid, on the surface, and drying them in a stream of air (Example 1).

Ingram does not teach a step of washing the beads with aqueous solution of a non-ionic surfactant.

Davis teaches method of making expandable polystyrene beads, where dispersant washed with non-ionic surfactant (see Abstract) at amount of 0.001-1% (see Claim 1).

Note that Davis uses the above surfactant in to wash out polyvinyl pyrrolidone (not phosphate as disclosed in the Application). However, washing out phosphate with non-ionic compounds is also possible. It is important to mention that surfactant decreases surface tension of aqueous solution, which improves access of washing solution to a surface of highly porous beads. It leads to decreased amount of washing solution and complete washing of beads from inorganic phosphate.

Iwamoto teaches a method of washing polystyrene pre-expanded particles (see Abstract and Column 6, line 15) with density of 45-46 g/l, having residual phosphate-based dispersant (see Column 2, line 20) with aqueous solution of a ionic and non-ionic compounds at concentration 0.0005-0.05 % and temperature of 50-80C (Column 5, line 40-45). Among the above non-ionic compounds having aliphatic hydroxyl group (alcohol) and polyoxyethylenealkylamine are mentioned (see Column 4, lines 55-60).

Therefore, Iwamoto shows that ionic and non-ionic compounds are both suitable for washing phosphates out.

Iwamoto discloses that the presence of the above agent significantly reduces the amount of waste compare to washing the phosphate with warm or acidified water.

The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945), 325 U.S. at 335, 65 USPQ at 301, see also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960), *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) and MPEP 2144.07.

In addition, it should be mention that Ingram uses both ionic and non-ionic surfactants in the impregnation step (see Column 4, line 55), right before the washing procedure.

Therefore, it would have been obvious to a person with ordinary skills in the art to use Davis's washing procedure in Ingram's process in order to reduce amount of waste in a process.

Regarding claim 2, polymerization is carried out at the presence of initiator and expanding agent (column 2, line 55 and column 2, line 10).

In reference to claim 3, the initiator system comprises two peroxides: benzoyl peroxide and t-butyl perbenzoate, which are used in the Application presently examining.

In reference to claim 4, Ingram discloses that expanding agent is pentane, which has a boiling point within the range of 10-100C (Example 1).

In reference to newly presented Claim 11 Ingram discloses a monochlorostyrene as a monomer (Column 1, line 50).

Claims 1-10 and 14 (newly presented) rejected under 35 U.S.C. 103(a) as being unpatentable over Gluck (US 6414041) herein Gluck in combination with Davis and Iwamoto.

Gluck discloses a following process:

a) forming an expandable bead by polymerizing in aqueous suspension of at least one vinylaromatic monomer in the presence of a suspending agent selected from inorganic salts of phosphoric acid;

b) recovering the expandable beads bead from the reaction container; c) washing the beads expandable bead thus obtained with an aqueous solution d) recovering the washed beads expandable bead substantially without any inorganic salt of phosphoric acid, on the surface, and drying them in a stream of air (see Example 1).

Gluck teaches an expandable styrene polymer with density from 5 to 80 g/ml (column 2, line 45) with graphite content from 0.1 to 25%wt.

Gluck discloses that such polystyrene can be used in heat insulating articles.

Gluck does not disclose washing procedure with non-ionic surfactant.

Davis teaches method of making expandable polystyrene beads, where dispersant washed with non-ionic surfactant (see Abstract) at amount of 0.001-1% (see Claim 1).

Note that Davis uses the above surfactant in to wash out polyvinyl pyrrolidone (not phosphate as disclosed in the Application). However, washing out, phosphate with non-ionic compounds is also possible.

Iwamoto teaches a method of washing polystyrene pre-expanded particles (see Abstract and Column 6, line 15) with density of 45-46 g/l, having residual phosphate-based dispersant (see Column 2, line 20) with aqueous solution of ionic or non-ionic compounds at concentration 0.0005-0.05 % and temperature of 50-80C (Column 5, line 40-45). Among the above materials non-ionic compounds having aliphatic hydroxyl group (alcohol) and are mentioned (see Column 4, lines 55-60).

Iwamoto discloses that the presence of the above agent significantly reduces the amount of waste compare to washing the phosphate with warm or acidified water.

Therefore, it would have been obvious to a person with ordinary skills in the art to use Davis's washing procedure in Gluck's process in order to reduce amount of waste in a process.

Claims 1, 12 (newly presented) and 13 (newly presented) rejected under 35 U.S.C. 103(a) as being unpatentable over Oohara et al (US 6221926) herein Oohara in combination with Davis and Iwamoto.

Oohara discloses a following process: a) forming an expandable bead by polymerizing in aqueous suspension of at least one vinylaromatic monomer in the presence of a suspending agent selected from inorganic salts of phosphoric acid;

- b) recovering the expandable beads bead from the reaction container;
- c) drying them in a stream of air (see Example 1).

Regarding Claims 12 and 13, Oohara discloses that his polystyrene particles have a molecular weight of 150000-600000 (Column 4, line 10).

Oohara does not disclose an washing procedure with non-ionic surfactant.

Washing procedure is necessary, since it reduced an amount of unwanted materials on the surface of the beads. The presence of such materials may have an adverse effect on the final articles (i.e. bad insulation properties, leakage, etc.)

Davis teaches method of making expandable polystyrene beads, where dispersant washed with non-ionic surfactant (see Abstract) at amount of 0.001-1% (see Claim 1).

Note that Davis uses the above surfactant in to wash out polyvinyl pyrrolidone (not phosphate as disclosed in the Application). However, washing out phosphate with non-ionic compounds is also possible.



Iwamoto teaches a method of washing polystyrene pre-expanded particles (see Abstract and Column 6, line 15) with density of 45-46 g/l, having residual phosphate-based dispersant (see Column 2, line 20) with aqueous solution of a surface active agent at concentration 0.0005-0.05 % and temperature of 50-80C (Column 5, line 40-45). Among the above surfactants non-ionic compounds having aliphatic hydroxyl group (alcohol) and polyoxyethylenealkylamine are mentioned (see Column 4, lines 55- 60).

Iwamoto discloses that the presence of the above agent significantly reduces the amount of waste compare to washing the phosphate with warm or acidified water.

Therefore, it would have been obvious to a person with ordinary skills in the art to use Davis's washing procedure in Oohara's process in order to eliminate adverse effect of phosphate on the final articles and reduce amount of waste in a process.

### ***Response to Arguments***

Applicant's arguments filed on 3/06/2008 have been fully considered but they are not persuasive.

The Applicant argues that Davis et al uses the washing solution containing a non-ionic surfactant to remove contaminating polyvinyl pyrrolidone. However, neither Ingram et al, nor Gluck, nor Oohara et al employ polyvinyl pyrrolidone in the preparation

of their expandable polystyrene beads, respectively. Therefore, there is no motivation to wash the beads with non-ionic surfactant.

The Examiner disagrees. The role of surfactant (both ionic and non- ionic) is to decrease surface tension of aqueous solution, which improves access of washing solution to a surface of highly porous beads. It leads to decreased amount of washing solution and complete washing of beads from inorganic phosphate. In another words, some parts of porous beads (i.e. small pores) are not accessible for washing solution containing only acidified water, since it has high surface tension. The problem can be easily resolved by adding a surfactant.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY LISTVOYB whose telephone number is (571)272-6105. The examiner can normally be reached on 10am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rabon Sergent/  
Primary Examiner, Art Unit 1796

GL